



November 30, 1994

Mr. Waddell Waters
North Carolina Department of
Environment, Health and Natural Resources
8025 North Point Blvd., Suite 100
Winston-Salem, NC 27106

RECEIVED
N.C. Dept. of EHNR

DEC 2 1994

Winston-Salem
Regional Office

**RE: Semi-Annual Groundwater Sampling Event and
and Remediation System Status**

Former Unocal Facility #9787-214
Inactive Red-Horse Truckstop
NCDEHNR Incident #10119
1342 Trollingwood Road, Mebane, NC
S&ME Project No. 1354-94-603

Dear Mr. Waters:

S&ME, Inc. on behalf of Unocal Corporation purged and sampled groundwater from all monitor wells (6) on-site on November 10, 1994, in accordance with state sampling protocol. Attached please find the Flowers Chemical Laboratories, Inc. analytical lab results (state certification #296). Also included are (1) monitor well purging/sampling data, (2) the November 10, 1994 BTEX and MTBE concentrations superimposed on the previous January-March 1993 BTEX plume map, (3) vacuum operating parameters (Table 1), (4) the October 5, 1994 air sample (carbon tube) analyses, and (5) vacuum extraction and emission calculations.

The November 10, 1994 analytical results indicate that the horizontal extent of the dissolved hydrocarbon plume remained at below quantitation levels (<0.5 ug/L for BTEX and MTBE) at peripheral wells (MW-1, MW-2, MW-6 and MW-7). Temporary downgradient monitor well TMW-8 was closed after sampling for the site assessment. The only two monitor wells exhibiting elevated dissolved hydrocarbon concentrations on-site are MW-3 and MW-4. MW-7 exhibited a low chloroform concentration of 1.40 ug/L. 1,2-DCA was detected also at MW-3 (13.2 ug/L) and MW-4 (29.3 ug/L). BTEX concentrations decreased over the year at MW-3 from 677.1 ug/L to 203 ug/L, and at

MW-4 from 98,000 ug/L to 87,400 ug/L.

We plan to expedite remediation of hydrocarbons in the area of "hotspot" monitor well MW-4 (former gasoline pump island and excavation area) by connecting a temporary 2-inch diameter flexible vacuum hose from HVE-1 vault to MW-4 (beneath the Red-Horse Truckstop sign) so that we can apply a vacuum directly to MW-4. This will occur in early December 1994. In this way, the product in MW-4 (0.08 feet, as measured on November 9, 1994) will be recovered more quickly in the vapor phase. After all product is removed from around MW-4 (estimate approximately 1 month), the temporary vacuum line will be removed. We plan to continue operating vacuum at the two horizontal vacuum wells HVE-1 and HVE-2, concurrently with vacuum at MW-4. Sparging at the eight vertical wells will also continue as normal.

The soil vapor extraction and air sparging remediation system composed of a 25-hp vacuum with four carbons (on discharge side of vacuum) and 80-gallon air/water separator (on intake side of vacuum), and a 50-hp air compressor with sparge controls, per the state approved September 10, 1993 CAP. The remediation system is presently in operation with no faults. The vacuum is presently operating at a vacuum of 9.6-inches of Hg and an inlet/outlet air flow rate of approximately 350-375 scfm (with no ambient bleed in air). Vacuum parameters are indicated in Table 1. Vacuums at the two HVE-1-2 wells range from 5 to 8 inches of Hg vacuum. The maximum vacuum radius of influence, as measured by a slack tube manometer and water level indicator is approximately 80 feet. The air compressor is operating at a range of 50 to 60 psi and an air flow of approximately 40 to 500 scfm/line of sparge wells. Air sparging pressures at the eight AS-1-7 and DMW-5 wells range from 35 to 40 psi. The maximum sparging radius of influence, as measured by a dissolved oxygen meter, water level indicator and slack tube manometer is approximately 50 to 60 feet. The air sparging system is cycled on and off over a 12 to 24 hour period, as mentioned in the CAP.

Based on laboratory analytical results of carbon tube samples taken on October 5, 1994,

the hydrocarbon extraction rate of the remediation system was 5.5 lbs./day (TPH) and 0.4 lbs./day (benzene) or an equivalent of 0.9 gallons of gasoline/day. The initial extraction rate on August 19, 1994 at system start-up was 262.7 lbs/day of TPH or an equivalent of 43.8 gallons of gasoline/day. A total of 956 lbs. or 0.7 tons (equivalent to 160 gallons of gasoline) of hydrocarbons have been extracted by the vacuum to date, from August 19, 1994 (system start-up) through November 23, 1994. The hydrocarbon extraction rate by the vacuum has decreased over time, as the secondary source of adsorbed hydrocarbons in the vadose zone is removed.

Air sparging is also effective at volatilizing and bioremediating the dissolved hydrocarbons in the subsurface. Under current operating procedures, the SVE (vacuum) and AS (air compressor) systems are interlocked, such that the sparge system could not operate if the vacuum were shut down. In this way air sparging alone is prevented. The AS system is also cycled by a four channel automatic timer, such that the two lines of eight sparging wells are switched on and off every 12 hours. In this way, contaminant transport by sparging and "dry zones" are minimized, and contaminant mass transfer and ROI are maximized.

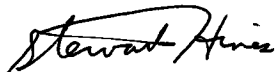
Air emissions after the four carbons on October 5, 1994 were as follows: TPH (2.5 lbs./day) and benzene (8.8E-2 lbs./day). OVA readings of the influent air stream were 110 ppm on October 28, 1994 and 70 ppm on November 23, 1994. The carbon is now spent and is no longer needed as the TPH emissions are well below the 40 lbs./day NCAC 2D guidance level.

We plan to sample all on-site monitor wells (6) again for the same parameters (EPA Methods 601, 602 including MTBE) and 610 on a semi-annual basis in March 1995. A report will follow within 30 days after we receive the laboratory results.

If you have any questions or need additional information, please do not hesitate to call.

Sincerely,

S&ME, Inc.



Stewart M. Hines, P.G.
Senior Project Manager/Hydrogeologist

Enclosures

cc: Wayne Holt - Unocal Corporation
Rick Holshouser - S&ME, Inc.
Ray Journigan - Property Owner
Gary Simcox - S&ME, Inc.